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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/892,459	06/28/2001	Masayuki Ariyoshi	033349-001	2130

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EXAMINER

CHANG, EDITH M

ART UNIT	PAPER NUMBER
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2637

DATE MAILED: 11/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/892,459

Applicant(s)

ARIYOSHI ET AL.

Examiner

Edith M Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 112601.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to because in FIG.4 block 230 the "SIR MEASURING POOTION" should be "SIR MEASURING PORTION".

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the

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drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 2, 6, 8, 12 and 14-18 are objected to because of the following informalities:

Claim 2 & Claim 8, line 3: “after interference cancellation” is suggested changing to “after interference cancellation by said interference canceling means”.

Claim 6, line 10 & Claim 12, lines 8-9: “the decoded data” is suggested changing to “the decoded first reception signal”.

Claim 14, line 3 & Claim 15, lines 4-5: “after interference cancellation” is suggested changing to “said canceling step”.

Claim 18, line 6: “said interference cancellation” is suggested changing to “said canceling step”.

Claims 16 and 17 are directly or indirectly dependent on the objected claim 15.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claims 1-6, 9-12 and 15-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, lines 20-21: "the transmission signal" lacks antecedent basis.

Claim 3, lines 9-10: the terms "the current reception signal" lack antecedent basis; line 13: "the past" lacks antecedent bases; and lines 12-14: wherein the post-interference cancellation signal-to-interference power ration for the first reception signal is obtained form the second signal-to-interference power ration measuring means, however the post-interference cancellation signal-to-interference power ration is estimated by the interference cancellation effect estimating means and the second signal-to-interference power ration measuring means determines the signal-to-interference power ration. It does not clearly indicate that how the post-interference cancellation signal-to-interference power ration for the first reception signal is obtained form the second signal-to-interference power ration measuring means.

Claim 4, lines 3-5: the terms "the current reception signal" lack antecedent bases.

Claim 5 & Claim 11, lines 2-3; Claim 17, line 2: "the current number of connections" lacks antecedent basis.

Claim 6, line 20: "the signal-to-interference power ratio of said first reception signal" lacks antecedent basis; and lines 27-28: "the transmission signal" lacks antecedent basis.

Claim 9, lines 11-12: "said reception signal of the past" lacks antecedent basis; and lines 10-12: wherein the post-interference cancellation signal-to-interference power ration for the reception signal is obtained form the second signal-to-interference power ration measuring means, however the post-interference cancellation signal-to-interference power ration is

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estimated by the interference cancellation effect estimating means and the second signal-to-interference power ratio measuring means determines the signal-to-interference power ratio. It does not clearly indicate that how the post-interference cancellation signal-to-interference power ratio of the reception signal is obtained from the second signal-to-interference power ratio measuring means.

Claim 10, lines 6-7: "the post-interference cancellation signal-to-interference power ratio measured by said second signal-to-interference power ratio measuring means" does not clearly indicate that how does the second signal-to-interference power ratio measuring means measures the post-interference cancellation signal-to-interference power ratio which is estimated by the interference cancellation effect estimating means, and the second signal-to-interference power ratio measuring means for determining the signal-to-interference power ratio of the signal from the interference canceling means.

Claim 12, line 19: "the signal-to-interference power ratio of said first reception signal" lacks antecedent basis.

Claim 15, lines 6-7: "the resulting signal-to-interference power ratio" lacks antecedent basis; and line 8: "said reception signal of the past" lacks antecedent basis.

Claim 16, line 6: "said reception signal measured in the past" lacks antecedent basis.

Claim 18, line 7: "said decoded data" lacks antecedent basis; line 12: "the signal-to-interference power ratio of said reception signal" lacks antecedent basis.

Claim 2 is dependent on the rejected claim 1.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 7 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawahashi et al. (US 6,137,788) in view of Lundby (US 6,529,482 B1).

Regarding **claims 1, 7 & 13**, Sawahashi et al. in FIG.25 and FIG.23B discloses a CDMA demodulating apparatus with the transmission power control and its method, comprising multistage interference canceller element 803 for canceling the interference signal in the reception signal (SPREAD SIGNAL INPUT to the input of element 803); the reception quality measuring unit element 804 (or element 822 of FIG.23B) estimating the reception quality of the interference-eliminated signal from the multistage interference canceller (element 803) to the target SIR setting unit element 805 (column 25 lines 1-5 wherein the reception quality is the SIR, the interference-eliminated signal from the multistage interference canceller is the post-interference signal); elements 804, 805 and 806 generating the TPC bit of the power control command by comparing the reception quality (SIR) of the interference-eliminated signal from the multistage interference canceller with a target value (column 24 lines 26-34). Hence Sawahashi et al. discloses the interference canceling means (multistage interference canceller, element 803 FIG.25); interference cancellation effect estimating means (reception quality measuring unit, element 804 FIG.25); and control command generating means (elements 804, 805 and 806 FIG.25) as recited in the claims.

However Sawahashi et al. does not explicitly show/specify the base station and mobile station in the CDMA system to which the power control is applied that is well known in the art.

Lundby teaches the base station (element 300) and mobile station (element 306) in the CDMA with the power control in FIG.3 and Abstract. In FIG.5 the base station, the element 518 is the receiver and the element 506 is the transmitter wherein the element 518 of element 300 is the receiving means of the base station receiving the signal and transmitting the power control command from element 510 via the transmitter element 506. In FIG.6, the mobile element 306 with its power control element 620 adjusts the transmitting signal (output of element 626) with the power command received from the output (the second reception signal) of the element 606 to the base station via the transmitter element 630.

Since Sawahashi et al. discloses the demodulating apparatus of a CDMA system with the power control, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the Sawahashi et al.'s demodulating apparatus used in the Lundby's closed/inner loop power control environment/system with the base station and mobile station taught by Lundby for the purpose of adequately responding to a loss of received signal quality (column 3 lines 25-30).

8. Claims 2, 8 and 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Sawahashi et al. (US 6,137,788) in view of Lundby (US 6,529,482 B1) as applied to claims 1 and 13 above, and further in view of Tong et al. (US 6,529,741 B1).

Regarding **claims 2, 8 & 14**, Sawahashi et al. does not explicitly show/specify the power control comprising inner loop power control and outer loop control that is well known in the art,

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however further Tong et al. teaches/shows both the inner and outer control loop threshold setting in FIG.1 wherein the FER & Threshold block calculates the FER of the decoded data from the Deinterleaver & Viterbi block and sets the target value in PCB GEN Comp. Thres. block based on the FER. As Sawahashi et al.'s demodulating apparatus of a CDMA system with the power control, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the outer loop control setting the target value based on the error rate taught by Tong et al. in Sawahashi et al.'s demodulating apparatus to control the power of received signal to decrease the error rate of the received signal for the purpose of increasing the capacity of the system (column 1 lines 32-40). Hence the target value of the modified Sawahashi et al.'s demodulating apparatus set based on the error rate of decoded data.

9. Claims 6, 12 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawahashi et al. (US 6,137,788) in view of Lundby (US 6,529,482 B1) and Tong et al. (US 6,529,741 B1).

Regarding **claims 6, 12 & 18**, Sawahashi et al. in FIG.25 and FIG.23B discloses a CDMA demodulating apparatus with the transmission power control and its method, comprising multistage interference canceller element 803 for canceling the interference signal in the reception signal (SPREAD SIGNAL INPUT to the input of element 803); the reception quality measuring unit element 804 (or element 822 of FIG.23B) estimating the reception quality of the interference-eliminated signal from the multistage interference canceller cancellation to the target SIR setting unit element 805 (column 25 lines 1-5 wherein the reception quality is the SIR, the interference-eliminated signal from the multistage interference canceller is the post-

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interference signal); elements 804, 805 and 806 generating the TPC bit of the power control command by comparing the reception quality (SIR) of the interference-eliminated signal from the multistage interference canceller cancellation with a target value (column 24 lines 26-34). Hence Sawahashi et al. discloses the interference canceling means (multistage interference canceller, element 803 FIG.25); interference cancellation effect estimating means (reception quality measuring unit, element 804 FIG.25); and control command generating means (elements 804, 805 and 806 FIG.25) as recited in the claims.

However Sawahashi et al. does not explicitly show/specify the base station and mobile station in the CDMA system to which the power control (comprising inner loop power control and outer loop control) is applied that is well known in the art.

Lundby teaches the base station (element 300) and mobile station (element 306) in the CDMA with the power control in FIG.3 and Abstract. In FIG.5 base station, the element 518 is the receiver and the element 506 is the transmitter wherein the element 518 of element 300 is the receiving means of the base station receiving the signal and transmitting the power control command from element 510 via the transmitter element 506. In FIG.6, the mobile element 306 with its power control element 620 adjusts the transmitting signal (output of element 626) with the power command received from the output (the second reception signal) of the element 606 to the base station via the transmitter element 630.

Since Sawahashi et al. discloses the demodulating apparatus of a CDMA system with the power control, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the Sawahashi et al.'s demodulating apparatus used in the Lundby's closed/inner loop power control environment/system with the base station and mobile station

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taught by Lundby for the purpose of adequately responding to a loss of received signal quality (column 3 lines 25-30).

Lundby suggests the frame error rate (FER) for the outer loop power control, further Tong et al. teaches/shows both the inner and outer control loop threshold setting in FIG. 1 wherein the FER & Threshold block calculates the FER of the decoded data from the Deinterleaver & Viterbi block and sets the threshold based on the FER. As Sawahashi et al.'s demodulating apparatus of a CDMA system with the power control, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the outer loop control taught by Tong et al. in Sawahashi et al.'s demodulating apparatus to control the power of received signal to decrease the error rate of the received signal for the purpose of increasing the capacity of the system (column 1 lines 32-40). Hence the modified Sawahashi et al.'s demodulating apparatus comprising the first target value setting means (the FER & Threshold block of FIG. 1 '741) and second target value setting means (element 805 of FIG. 25 '788) as cited in the claims.

Allowable Subject Matter

10. Claims 3-5, 9-11 and 15-17 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not teach or suggest, alone or in a combination, among other things, at least a CDMA power control system and its method as a whole, the combination of elements and features as claimed, which includes the interference cancellation effect estimating means estimating the post-interference cancellation signal-to-interference power ratio (SIR) based on the SIR obtained from the first SIR measuring means and the post-interference cancellation SIR obtained from the second SIR measuring means which determines the SIR of the reception signal after interference cancellation by the interference canceling means.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M Chang whose telephone number is 571-272-3041. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jayanti Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

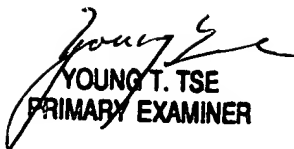
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Edith Chang

October 28, 2004


YOUNG T. TSE
PRIMARY EXAMINER